

**What is claimed is:**

1           1. A method of preparing a quaternary ammonium hydroxide compound  
2 having the formula  $(NR^1R^2R^3R^4)OH$ , wherein  
3           R<sup>1</sup> and R<sup>2</sup> are independently C<sub>1</sub>-C<sub>4</sub> alkyl;  
4           R<sup>3</sup> is benzyl or a C<sub>1</sub>-C<sub>20</sub> alkyl or a C<sub>1</sub>-C<sub>20</sub> aryl-sutstituted alkyl;  
5           R<sup>4</sup> is a C<sub>8</sub>-C<sub>20</sub> alkyl,  
6 the method comprising the step of reacting a quaternary ammonium compound having the  
7 formula  $(NR^1R^2R^3R^4)^+ X^-$ , wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are as defined above and X is Br or Cl,  
8 with a metal hydroxide in an aminoalcohol solvent to yield the quaternary ammonium hydroxide.

1           2. The method of claim 1, further comprising the step of removing any metal  
2 chloride or metal bromide formed by the reaction of the quaternary ammonium compound and  
3 the metal hydroxide.

1           3. The method of claim 1, where he reaction is performed in the absence of  
2 water.

1           4. The method of claim 1, herein any excess metal hydroxide is removed  
2 after the reaction.

1           5. The method of claim 1, wherein X is Cl.  
2

1           6. The method of claim 1, wherein X is Br.

1           7. The method of claim 1, wherein R<sup>3</sup> is benzyl or a C<sub>1</sub>-C<sub>20</sub> alkyl.

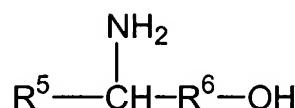
1           8. The method of claim 1, wherein R<sup>1</sup> and R<sup>2</sup> are methyl, and R<sup>3</sup> is benzyl.

1           9. The method of claim 5, wherein R<sup>4</sup> is a C<sub>8</sub>-C<sub>12</sub> alkyl.

1           10. The method of claim 1, wherein R<sup>1</sup> and R<sup>2</sup> are methyl and R<sup>3</sup> and R<sup>4</sup> are  
2       C<sub>8</sub>-C<sub>12</sub> alkyl.

1           11. The method of claim 1, wherein R<sup>3</sup> and R<sup>4</sup> are decyl.

1           12. The method of claim 1, wherein the aminoalcohol has the formula



3       wherein R<sup>5</sup> is hydrogen or a C<sub>1</sub>-C<sub>3</sub> alkyl; R<sup>6</sup> is a bond or a C<sub>1</sub>-C<sub>3</sub> alkyl.

1           13. The method of claim 12, wherein R<sup>5</sup> is hydrogen or a linear C<sub>1</sub>-C<sub>3</sub> alkyl  
2       and R<sup>6</sup> is a linear C<sub>1</sub>-C<sub>3</sub> alkyl.

1           14. The method of claim 12, wherein the aminoalcohol has the formula NH<sub>2</sub>-  
2       (CH<sub>2</sub>)<sub>n</sub>-OH, wherein n is an integer from 2 to 6.

1               15. The method of claim 12, wherein the aminoalcohol is ethanolamine.

1               16. A method of preparing a quaternary ammonium carbonate having the

2 formula  $(NR^1R^2R^3R^4)_2CO_3$ , wherein

3               R<sup>1</sup> and R<sup>2</sup> are independently C<sub>1</sub>-C<sub>4</sub> alkyl;

4               R<sup>3</sup> is a C<sub>1</sub>-C<sub>20</sub> alkyl or a C<sub>1</sub>-C<sub>20</sub> aryl-substituted alkyl;

5               R<sup>4</sup> is a C<sub>8</sub>-C<sub>20</sub> alkyl,

6               the method comprising the steps of:

7                     (a) reacting a quaternary ammonium compound having the formula  
8                $(NR^1R^2R^3R^4)^+ X^-$ , wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are as defined above and X is Br or Cl, with a  
9               metal hydroxide in an aminoalcohol solvent to yield a quaternary ammonium hydroxide having  
10               the formula  $(NR^1R^2R^3R^4)OH$ ; and

11                     (b) reacting the quaternary ammonium hydroxide with a carbonate or  
12               bicarbonate source to yield the quaternary ammonium carbonate.